No. 92

E. 13593

THE JOURNAL OF INDIAN ART

No. 2.

April, 1884.] [Price 1 Rupee or 1/6.

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Gq. 65519
2018

INTRODUCTION.

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Enamelling and other Industrial Arts of Rajputana, Central India and adjacent Provinces, by T. H. HENDLEY, Surgeon-Major, Chairman Executive Committee and Honorary Secretary General Committee, Jeypore Exhibition, 1883.

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Photo-lithographed and Published by
W. GRIGGS, Elm House, Hanover Street, Peckham, London.

RAM SINGH DEL MAYO SCHOOL OF ART LAHORE

This Journal can be obtained at Messrs. Thacker, Spink & Co., Calcutta, Messrs. Cooper, Madon & Co., Bombay, or from the publisher, Mr. Griggs, Elm House, Hanover Street, Peckham, London.

The Journal of Indian Art.

INTRODUCTION.

THE second number of this Journal is devoted to a description of some of the Industrial Arts which are practised in the Native States, especially in those which are situated in Rajputana and Central India; whilst the illustrations are, for the most part, taken from specimens shown at the Exhibition which was held at Jeypore in the two opening months of 1883. The number is *special*, inasmuch as it is not confined to one or two branches of Art, as proposed in the Government Resolution published with the opening Part of the Journal, and as there are more coloured illustrations than it is probable it will be found expedient to produce in future at one time.

As Mr. Buck, the Secretary to the Government of India in the Department of Revenue and Agriculture, suggested that this number should be written in recognition of the success of the Jeypore Exhibition, it will not be out of place to give here a few particulars regarding it.

Although the scheme was only proposed in June, 1882, and in most of the classes entries were confined to exhibitors from Rajputana, Malwa, the Cis-Sutlej States of the Punjab, and four adjacent British Commissionerships, no less than twenty-six Native Princes contributed, and nearly ten thousand separate articles were received from other sources, and displayed in one of the palaces of the Maharaja. The official jurors, European and Native gentlemen specially qualified for the work, awarded 248 gold, silver, and bronze medals and certificates, of which 74 fell to the section of Raw Produce.

It was generally considered that the Exhibition was chiefly remarkable for the great variety of the contributions, and for the interesting and valuable treasures, especially arms, books, and carpets, lent by H.H. the Maharaja of Jeypore and the Indian Chiefs who so liberally supported him. The collection of Raw Produce was large and instructive, but was quite outshone by the number and importance of the examples of Art Manufacture.

H.H. the Maharaja of Jeypore, who not only paid all the expenses of this great undertaking, but took a real personal interest in it, has, to use the words of a notice in the *Times* of September 20th last, "set an example which has produced a most excellent effect on popular opinion generally, both by encouraging Native Princes and Chiefs to exhibit their treasures and by inducing the labourers and artisans to inspect the improved methods and the highest forms of production in their different crafts and professions."

Admission to the Jeypore Exhibition was free, because experience has shown that the smallest entrance fee in India keeps away the classes it is most advisable to assist, namely, those who desire to improve by careful examination and study. The attendance rose to a maximum of 13,589 in one day, and reached a grand total for the two months of 236,954 persons.

The young Chief of Jeypore may therefore be congratulated on having given an opportunity not only to the rich purchasing public of seeing what a wealth of Industrial Art there is around them, but of having taught to them and to the poor producers a magnificent Art lesson which must eventuate in improving the manufactures of his own State as well as the taste of the people.

T. H. HENDLEY,

Chairman Executive Committee and Honorary Secretary General Committee Jeypore Exhibition, 1883.

LONDON,
November, 1883.

ENAMEL.—MINAKARI.

THE art of enamelling on metal is successfully practised in many parts of India, but it is universally acknowledged that the best work on gold is produced at Jeypore, in Rajputana. The colours employed rival the tints of the rainbow in purity and brilliancy, and they are laid on the gold by the Jeypore artists with such exquisite taste that there is never a want of harmony; even when jewels are also used they serve but to enhance the beauty of the enamel.

The enamels of Europe and of Persia are poor and lustreless in comparison with those of Jeypore, and in none of them is the fiery red, for which the latter is so remarkable, at all approached.

At Jeypore enamelling is done on gold, silver, and copper, but it is in works in the most precious metal alone that it has secured the pre-eminence.

The following are the principal places at which the art is practised in India:—

On Gold.	*On Silver.*	*On Copper.*
Jeypore.	Multan.	Kashmir.
Ulwar.	Bahawalpore.	Many places in the Punjab.
Delhi.	Kashmir.	Jeypore.
Benares.	Kangra.	
	Kulu.	
	Lahore.	
	Hyderabad, Sind	
	Kurachi, Sind.	
	Abbotabad.	
	Nurpur.	
	Lucknow.	
	Cutch.	
	Jeypore.	

And by individual workmen at other places.

QUASI-ENAMELS.

Pertabgarh. Rutlam.

The special province of this article is to describe the enamel manufactured in the Native States of India, and to compare it with the work executed elsewhere.

Labarte, in his Handbook of the Arts of the Middle Ages, endeavours to prove that the art of enamelling originated in Phœnicia, and thence found its way into Persia, where it was known in the reign of Chosroes (A.D. 531 to 579). The Greeks and Indians, in their turn, he thinks, acquired the art from the Persians. He, however, mentions that Mons. Panthier, in his Histoire de la Chine, quotes a document, in which it is stated that a merchant of Yoüetchi, or Scythia, introduced into China, in the reign of Thaiwonti (A.D. 422 to 451) the art of making glass of different colours.

We may therefore justly conclude that enamelling, which is only a branch of the art of vitrification, was known at an early period, if it did not originate, in Scythia, the home of the Turanians. In the Boulak Museum, at Cairo, some of the jewels of the Queen Aahhotep (wife of Aahmes I. of the 18th Dynasty), who lived about B.C. 1700, are ornamented with blue glass and a species of cloisonné enamel. These facts seem to indicate a Turanian origin of the art, and there are many points connected with its practice in India which would appear to confirm the theory. It is remarkable that the best enamellers in Europe have been the Etruscan Florentines, and in modern India the Sikhs, both, it is thought, of Turanian descent.

The most ancient specimen of Indian enamel now in existence is probably the crutch staff of Maharája Mán Singh, of Jeypore, one of the greatest of the Chiefs, who adorned the court of Akbar at the close of the 16th century.

This staff, upon which the Maharája leaned when standing before the throne of the Emperor, is fifty-two inches in length, and is composed of thirty-three cylinders of gold arranged on a central core of strong copper, the whole being surmounted by a crutch of light green jade set with gems. Each of the thirty-two upper cylinders is painted in enamel with figures of animals, landscapes, and flowers. The figures are boldly and carefully drawn by one who had evidently studied in the School of Nature; the colours are wonderfully pure and brilliant, and the work is executed with more skill and evenness than in anything we see at the present day. A large plate, one of the Prince of Wales' Indian presents, now shown at the South Kensington Museum, proves the truth of this remark, as it will be at once observed that its colours are often of unequal depth and that there are blotches here and there which much impair its beauty. This, to some extent, however, may be due to the great number of colours attempted, and to the unusually large size of the piece.

Both ancient and modern Persian enamels are more subdued in tone and more elaborately ornamented than this splendid specimen of ancient art, which is decidedly Turanian in the boldness of its design, in the nature of some of the subjects, as, for example, the lotus flowers and leaves, and in the daring manner in which the primary colours are employed to produce a harmonious whole. We must also recollect that the owner of this most venerable piece of enamel was one of the pillars

of the throne of a true Turanian sovereign—a most munificent patron of the arts, alike of his new home in India and of his ancestral dominions in Central Asia—that he had himself governed the kingdom of Cabul, and that other works of art, for example, a number of carpets, still in existence at Jeypore, were brought by him from the North, and are decidedly Turanian in design.*

In many of these carpets the Tartar cloud and lotus are prominent features. So it is also with some of the wall decoration of the Jeypore palaces of this period. It is thus clear that at the time of the production of the earliest known specimen of Indian enamel, Turanian art was in the ascendant.

Maharája Mán Singh is stated to have brought five Sikh enamel workers from Lahore, and the fact that the descendants of these men still procure their colours from that town to carry on the trade of their forefathers confirms that tradition. The principal enamellers in Jeypore, all descended from these Sikhs, are as follow:—

Hari Singh . . .	descended from	Zoráwar Singh.
Amar Singh . .		
Kishan Singh . .	„ „	Jawahir Singh.
Ghuma Singh . .		
Shām Singh . .		
Gheesa Singh . .		
Amba Singh . .	„ „	Sookha Singh.
Gokal	„ „	Bhairūn Singh.
Har Sookh Singh .	„ „	Unknown.

The fifth family is extinct.

Hari Singh and Kishan Singh are considered the best artists, and to the latter was awarded the first prize at the late Jeypore Exhibition.

The enamellers rarely work directly for the public, but execute orders for the rich jewellers, who usually send them the article to be enamelled ready for the process.

Enamelling or painting on metals with mineral oxides—in such a manner that the colours are fixed upon, or adhere to the metal—is done in several ways. That by incrustation is the Oriental method.

There are two kinds of incrusted enamels—the Cloisonné, or filagree enamel, and the Champlevé, in which the outline is formed by the plate itself, while the colours are placed in depressions hollowed out of the metal to receive them, and are made to adhere by fire.

The design is prepared by the *chitera*, or artist, generally a servant of the master jeweller, who also keeps books of patterns, some of great age, from which customers can make a selection, generally with a very good idea of the result to be obtained in metal, as may be judged from the illustrations to this paper.

The *sunar*, or goldsmith, then forms the article to be enamelled, and afterwards passes it on to the *gharai*, the chaser or engraver, who engraves the pattern. These men are not Sikhs, but ordinary members of the goldsmith or carpenter sub-castes of Hindus. The engraving is done with steel styles, and the polishing is completed with similar tools and agates.

The surface of the pits in the gold is ornamented with hatchings, which serve not only to make the enamel adhere firmly, but to increase the play of light and shade through the transparent colours. The enameller or *minakár* now applies the colours in the order of their hardness, or power of resisting fire, beginning with the hardest. Before the enamel is applied, the surface of the ornament is carefully burnished and cleansed.

The colours are obtained in opaque vitreous masses from Lahore, where they are prepared by Mahomedan *manihars*, or bracelet makers. The Jeypore workmen state that they cannot make the colours themselves.

The base of each colour is vitreous, and the colouring matter is the oxide of a metal such as cobalt or iron. Large quantities of cobalt are obtained from Bhagore, near Khetri, the chief town of a tributary state of Jeypore, and are used in producing the beautiful blue enamel.

All the colours known can be applied to gold. Black, green, blue, dark yellow, orange, pink, and a peculiar salmon colour, can be used with silver. Copper only admits of the employment of white, black, and pink, and even of these the last is made to adhere with difficulty (this applies to Jeypore copper enamels). In the order of hardness and of application to the metals, the colours are as follow—white, blue, green, black, red. The pure ruby red is the most fugitive, and it is only the most experienced workmen who can bring out its beauties. Moreover, the Jeypore artist alone succeeds in giving the transparent lustre to this colour which so charmed and surprised the jurors of the earliest great international European exhibitions. The enamel workers at Ulwur, an offshoot from Jeypore, are sometimes fairly successful, but the Delhi jewellers, who turn out a great deal of inferior enamel, only produce a red with an orange or yellow tinge.

The Jeypore artist is renowned not only for the purity of his colours, but for the evenness with which they are applied—though here he, too, does not equal the early enamellers in skill; partly, perhaps, because of the haste with which everything is wanted in the present day, but chiefly owing, in important works, to the great sizes now attempted. The mediæval workmen rarely undertook such large specimens, but generally built up any considerable piece by uniting many smaller ones. The enameller, as before mentioned, begins with the whites, and usually burns in each colour separately, though two or more may be fixed at one firing. The colour is pulverised and made into a

* In the Ain-i-Akbari, or Institutes of Akbar by Abul Fazl, there is an interesting note under the head *Minakár*, or Enameller. He is said to "enamel cups, flagons, and rings; he first lays on the colour, and after enamelling puts the metal into the fire two or three times. For a tola of gold that he enamels he charges 16 dams (two-fifths of a rupee), and for a tola of silver 7 dams." These were probably the prices paid for inferior work. Nothing is mentioned with regard to the history of enamelling, and allied arts, but it is stated that Akbar did his utmost to attract the best artists from all parts of the world.

paste, which is applied with a probe. As soon as a sufficient number of pieces of the same colour are ready, the furnace—a very primitive construction of clay—is charged with charcoal of fine quality, and made hot. The ornaments are put on a piece of talc over the glowing fire, and the heat is maintained at such a degree, and for such a time, as experience has proved to be requisite for fixing the particular colour.

The piece is next polished with *kurand*, or corundum, and if after this any defect in the enamel should appear, the work is done over again. The ornament, after polishing, is heated gently, and cleansed by rapidly immersing it in a strong acid solution made from fruit. Each colour—or group of colours in some cases—requires similar care, and as large specimens may have to be fired as many as eighteen times, it is evident that the cost of enamelling must always be heavy, and that really good pieces can never be prepared hastily.

The enameller always works in his own home, and is assisted by most of his family. For example, in the house of Kishan Singh, the father works in a room on the ground floor, to enable him to watch the furnace, which from time to time is fed by the women of the family, who carry on their domestic occupations in the central courtyard; his sons and grandsons sit in a small hut on the roof, painting the enamel colours on to ornaments of all kinds, ranging, in the case of the sons, from elaborate plates, to small lockets and similar articles, upon which the youngest children, of seven or eight, are trying their powers. Each artist sits on the ground before a low stool, in front of which are ranged his moistened colours, in a pallet made of a row of depressions in a long piece of brass. His dry colours, tools, and other appliances are also placed on the stool.

Rare old designs, valuable ornaments and pigments, are tied up in dirty rags, and kept in niches in the walls of the rooms. A strong carved door shuts off the house and its occupants from the street, and serves to keep out thieves and too curious visitors.

Such are the conditions under which most art work is executed in India.

If the process of firing is done immediately after each colour is applied, the ornament, if of the ordinary character, can be enamelled and set with gems at the rate of about three or four days for each tola, or one rupee weight; thus, for example, a bracelet of five tolas weight would take from fifteen to twenty days for completion. The cost varies, according to the number of colours, from two to five rupees for each tola in weight of gold. Large pieces cost more in proportion.

The total annual sale of enamel in Jeypore is about 20,000 rupees, of which, perhaps, a third may be for Europeans.

It has been frequently stated that the manufacture of enamel is a royal monopoly at Jeypore. This is incorrect. When work has to be done for the Court, all other orders are put aside until its completion; but beyond this there is no restriction—not even a tax upon the manufacture. It is a case of the largest and most important purchaser having the first claim; and it is simply owing to the liberal patronage of the Jeypore princes, especially at times of unusual distress or scarcity of money amongst the ordinary purchasers, that the enamellers, like so many other art workmen, have been able for so long a period to remain at their capital.

The uses to which enamel is put are very varied. All the better kinds of native jewellery are enamelled on the back, and usually, also, on the edges and between the gems in front.

Charms, armlets, anklets, or bangles, and necklaces, are made in large numbers; and for the use of princes and nobles, the handles of swords, of daggers, of chowries, of fans or of umbrellas, of whisks of yak-tails, peacock's feathers, or ivory threads, and sometimes vessels, are prepared.

Horse, camel, and elephant trappings have also been adorned with gold enamel; in short where gold and jewels can be employed for enriching metallic surfaces, enamel is equally available, and with precious stones it can also be used as a foil, or to enhance their beauty.

A magnificent collection of Jeypore enamels, which was presented by H. H. the late Maharája of Jeypore to H.R.H. the Prince of Wales, can be seen at the South Kensington Museum in the Indian Section.

The following list is taken from the catalogue of the Jeypore Exhibition of 1883; it will give an idea of the style and cost of articles made for Europeans.

		Rs.	as.	p.
Bracelet, crocodile pattern		100	0	0
,, oval in cross section		108	0	0
,, plaques of Jeypore enamel, with Pertabgarh work on the backs of each		108	0	0
,, set with diamonds		200	0	0
'Atrdān (perfume holder) and tray (a large piece)		490	0	0
Ditto, smaller		165	0	0
Fish Ring, enamelled		6	8	0
Pair of Earrings		18	0	0
Lockets, mango-shaped, weighing from ½ a tola to 2½ tolas) ...	15 0 0 to	75	0	0
Lockets, flat, English shape	25 0 0 to	75	0	0
Necklaces, plain or set with gems—	210 0 0 to	1200	0	0
Hair Pin		10	0	0
Breast Pin		12	0	0
Toothpick		7	0	0

Besides these, sleeve-links, card-cases, match-boxes, whistles, jointed fish charms, scarf-rings, and brooches are made.

The most characteristic and inexpensive examples of the work are perhaps mango-shaped charms or lockets, which may be bought for from 25 to 35 rupees, and bracelets at about 95 to 150 rupees each.

The *kairi*, or mango-shaped locket, is used by Hindus to contain scent, and by Mahomedans to hold a small compass to indicate the direction of Mecca. The bracelets are usually oval in section when made for Europeans, and are enamelled as carefully on the inner as on the outer surface. The ornament is always made hollow, and is filled up with a composition, com-

posed of two parts of alum and one of salt, pulverised together and heated with the specimen. The necklaces are generally series of plaques united by chains or links of gold, and are reversible, the back being constructed of medallions of Pertabgarh or Rutlam enamels.

Necklets or hárs, rosaries and watch-chains of enamelled balls, are also made. As the plaques used as brooches afford good surfaces for enamelling, the designs upon them are bolder than usual.

Large cups and plates are occasionally made, and it is evident that the art may be applied to many other uses, such as the adornment of the cases of ladies' watches, of small boxes, and of church plate.

All the above remarks relate to work on gold. The Jeypore jewellers have always maintained that, for good enamelling, only the pure metal can be employed. To a certain extent and for some colours this is correct, but fair results can be obtained on 22 or even on 18 carat gold, and no doubt for many small ornaments they adopt the lowest standard possible and profit by so doing.

Silver enamel of good quality is frequently made in Jeypore by Ghuma Singh and at the School of Art, but its production is not much encouraged by the jewellers, and the men do not like to work in this metal, as the difficulties of fixing the colours and the risks are much greater than when gold is used. There is some demand for false eyes for idols in enamel on copper, but beyond this little work is executed in that material.

Unlike some of the champlevé copper enamel of Limoges the flesh of figures is always done in colour and not in gold. The Jeypore enamel is very different from that of Limoges, in which, moreover, the beautiful red hues are not attempted. The nearest approach to this colour in the excellent collection of the latter at the British Museum (London) is an orange red on the coat ot a man standing near the cross in a study of the crucifixion by Jean De Court, circa. 1550.

There are some good examples of enamel on the precious metals at the same museum, for example, the Dagger of Hyder Ali (A.D. 1728—1782), given by him to Sir Hector Monro, K.C.B., the sheath mounts of which are fair specimens of Jeypore enamel on gold.

Close to this is a dagger with ornament in Persian enamel.

Traces of red enamel very similar to that of Jeypore are observable on a pair of snuffers made in Italy in the time of Henry VIII. for Cardinal Bainbridge; this is interesting as the work, in all probability, of Florentines of Turanian descent.

In the Jewellery Section of the Indian Museum at South Kensington there are many specimens of enamel on gold, beside those in the Prince of Wales' collection, such as :—

No. 03,003. Three coarsely-enamelled Nathdwara charms (a holy shrine in Rajputana). From Jeypore.

No. 08,668. Dragon's-head bracelet, labelled "Bengal." Probably fair Jeypore gold enamel.

No. 03,304. Necklace with gold enamel on the back.

No. 3,400. Section, *Arms and Armour*, is a good specimen of Persian work on gold enamel sword mounts.

As regards design, it is unquestionable that the modern Indian work is less artistic than the old. The boldness and character shown in the older examples have given place to elaborate repetitions of the Persian floral and geometrical ornament.

The truth of these remarks is not only borne out by the illustrations which accompany this article, but was evident to the jurors at the Jeypore Exhibition, who had a good opportunity of comparing some fine old specimens, lent by Indian princes, with a large selection of modern examples of weapons and plate, such as hookas and their appurtenances. Mr. Kipling, the official reporter for the Enamel Classes, writes that "One or two articles of an older date in the loan collection, *e.g.*, a dagger sheath from the Maharája of Jeypore, were superior in tone and quality of colour to any new work shown." H.H. the Mahārája of Jhallawar, exhibited at Jeypore a dagger, the gold sheath of which was beautifully decorated with Persian enamel in about twelve different colours. The superiority of the Indian work even to this charming example was unquestionable, and it was dependent upon the judicious use of pure primary colours harmonised as only the Indian artist knows how to do, instead of by employing a lower scale of tints.

It has been observed that in England the art of enamelling has been greatly depressed and retarded by the considerable advantage the enameller derives from the discovery of any colour uncommonly brilliant, clear, or hard, as on this account the artist naturally endeavours to keep his process secret as the source of private gain. This is equally true of India, but it is evident that to know how to produce certain colours is by no means the only cause of success, as in families using the same pigments, and, presumably, all equally well acquainted with the technical processes, one—as, for example, the father, in Kishan Singh's household—may be a master workman, while his sons are only in the second or third rank. The power of producing a good pure red is the measure of the ability of the enameller.

Mr. Baden-Powell, in his excellent account of Indian enamelling in the Handbook of the Manufactures of the Punjab, has given formula for making some of the enamel colours; but as little is known on the subject, and objections are made to disclosing what are really trade secrets, it has not been thought necessary to attempt to describe them here.

Some fine silver enamel work was sent to the Jeypore Exhibition from Bahawalpur—

	Rs.	as.	p.
A Suráhi or water-bottle	85	8	9
A tumbler	87	8	0
A scent phial ('atrdán)	17	8	0
An antimony holder (Surmadani) ...	16	5	11

All these articles were parcel gilt silver enamel,

coloured dark blue and emerald green. The patterns are chiefly conventional flowers in panels, scrolls, and geometrical diaper work. The general effect was rich and handsome. This work does not require frequent firing. It is probably of the same origin as the Multan enamel, which is stated by Mr. Baden-Powell to have been first made there by one Naulu, 400 years ago. An illustration is given (Plate XIII., No. 3) of a portion of a bracelet from Multan. The colours generally employed are blue, black, yellow, and several shades of orange, brick-dust red, or pink. The articles manufactured are chiefly personal ornaments in silver, such as bracelets, necklaces, studs of various kinds, &c. The principal dealers are Vasu Rám and Khema Rám, who charge about R. 1-4 to Rs. 2 per tola for workmanship.

A few very cheap enamel ornaments of similar character were sent to the Simla Exhibition of 1881 from Hyderabad in Sind. A good red colour was used effectively in some of them.

The enamels from Kangra and Kulu, also applied to silver jewellery, are remarkable for the excellence of their blues and are often parcel gilt. Specimens from all these places are shown at the Indian Museum at South Kensington.

The Rewah Durbar exhibited at Jeypore a magnificent silver gilt and enamelled hooka, made at Lucknow by Lachhman Dás and Shām Lāl. The blue and green enamelled grounds contrasted beautifully with the flowers of white spinel. There is also a fine hooka in the new Indian Collection at South Kensington, in which yellow, brown, orange, and light blue tints are employed in addition to the dark blues and green; the general effect, however, is poor, and not equal to a plate of similar work from Kashmir displayed in the same case.

PERTABGARH ENAMELS.

The so-called green enamels made at Pertabgarh, a small town, the capital of a Hindu principality in the Oodeypore or Meywár Political Agency, are not true enamels.

The mode of preparation is kept most carefully secret by the two or three families who practice the art.

The work is sold in the form of flat plaques of different shapes, which are afterwards utilised in many ways, either as separate ornaments or as backings for enamelled brooches or bracelets, which can thus be worn with either side outmost.

The medallions are composed of green glass, upon which quaint patterns of figures, landscapes, and flowers are traced in gold. A piece of white foil with silver backing, termed *dānk*, is placed behind the glass, and serves to give that peculiar lustre and depth of colour to the ground which is so much admired.

In the absence of exact information, which it seems impossible to procure, it may be noted that native authorities state that the patterns are etched into the glass by means of a strong acid (probably the hydrofluoric), and that the incisions are filled with very fine and pure powdered gold, which is made to adhere to the ground by exposing it first to a very high temperature in a furnace, and then to prolonged gentle heat in an oven.

Some writers have thought that the figures are cut out of a piece of gold leaf, which is afterwards applied to a layer of hot enamel. Neither of these explanations can be held to be perfectly satisfactory.

There is a wall frame at the Indian Museum in London, containing numerous specimens of this work (Nos. 9684, 9685, 9686, 9687—section, Jewellery).

In a large plaque at the Geological Museum in Jermyn Street, London, the gold figures appear so deep as to favour the view of their being cut out of a sheet of gold leaf.

Jagan Nāth and Nábh Chand—Hindus—are the principal makers at Pertabgarh.

RUTLAM ENAMEL.

Rūtlám quasi-enamel differs from the Pertabgarh work in the colour of the glass, which is blue.

Rūtlám is the chief town of a small state in the Central India Agency, not far from Pertabgarh.

SILVER PLATE.

AT the Jeypore Exhibition a considerable quantity of silver plate was shown. The jury awarded the first prize, for purely Indian work, to the collection from Tonk, in Rajputána, which they considered, "on the whole, to be the best and most characteristic present." The reporter for the section adds that "open work caskets, 'atrdáns, and other articles, parcel-gilt, were the favourite forms, and some of these were good in design as well as in execution."

The Tonk plate was lent by H.H. the Nawab of Tonk, and his Prime Minister, Sirdár Obedullah Khan, C.S.I.

Most of the articles were such as are used by Mahomedan nobles, as, for example—a large centrepiece, with numerous receptacles for perfumes, arranged as flower buds on a plant, and small heart-shaped boxes for spices on a tray (Plate XIV., Fig. 2); a round salver, for holding the prepared betel, or pan (Plate XV., Fig. 5); an 'atrdán or perfume stand (Plate XV., Fig. 3); rosewater sprinklers (guläbposh) of various kinds, and silver boxes of different patterns.

Some of these pieces were of plain silver, embossed or pierced in bold floral or geometrical designs, but the majority were also parcel-gilt, and the judicious and artistic manner in which the gold was employed greatly increased the beauty of the plate, and was well calculated to produce a rich effect in the conditions under which it is usually seen, namely, in a durbar or public assembly, where minute examination is impossible. It is not, however, intended to imply that the Tonk silver is not well finished, as this would be incorrect, especially as regards some of the smaller pieces, a few of which were beautifully executed, as, for example—a kiblanamá or Mahomedan compass, which was also partially enamelled, and some articulated fish-shaped phials — surmadáni or antimony holders.

There was none of the overloading of ornament so characteristic of much Indian, especially of Kashmir, work, and the forms of the different articles were simple and pleasing, well adapted for the ends they were to serve.

The Tonk silver is made in three of the Central India districts of that very scattered State—namely, in Chabrah near Guna, in Piráwah, and in Sironj. The workmen, who from their names appear to be all Hindus and Sunárs, or goldsmiths, by caste, are:—

Baldeo - - - at Chabrah.
Kālu, Bhairun, Pirthi, Lālak - - - at Piráwah.
Karori - - - at Sironj.

The cost of manufacture for plain work is 4 annas per tola, and for ornamented and gilt plate from R. 1-8 to Rs. 2 per tola.

In the Indian Museum in London there is a salver, in appearance very similar to the Tonk examples; and of the same character are spice boxes, rosewater syringes for use at the Holi festival, and perfume holders made at the native capital of Indore. It is probable that this peculiar plate was originally manufactured in the Central Provinces, where, however, from the demand for it by Europeans, overproduction has resulted in deterioration; further, that the inaccessibility of the outlying districts of Tonk, where some of the goldsmiths resided, has preserved the original superiority. The patronage of a Mahomedan Court, preferring good work to undue haste, has possibly also had an important influence.

It is noteworthy that many of the peculiar surface designs of this class of silver are also applied to sandalwood boxes and other suitable articles at Rāmpura in the Indore territory.

The Thakur of Bagru, one of the chief nobles of Jeypore, sent a few contributions to the exhibition of somewhat similar character. These were the work of a goldsmith living on his estate. A Chūski or drinking-cup, with a cover ending in a spout, the jury considered to be admirably designed, and awarded it the second prize. Particular attention is drawn to this case, as it shows what an immense influence may be exerted by an enlightened patron, and explains the transference from one place to another of a particular art. A new and most interesting style of engraved silver plate has been developed at Ulwar. Nand Kishor, of the carpenter caste, studied at the School of Engineering at Rūrki, and being a man of much natural ability, attained to great proficiency in engraving and the allied arts. He introduced a new method of ornamenting burnished silver surfaces, with spirited figures of animals, birds, and insects in the midst of foliage.

The fur and markings of the animals are imitated with great truthfulness, and the vegetation is also marvellously natural. The articles adorned are generally of European form, such as tea-sets, snuff-boxes, or card-cases; and, no doubt, the natural treatment of the subjects, coupled with a certain unsuitability of such fine engraving on silver for these purposes, are wrong in principle, yet one cannot but admire the skill and truthfulness with which the work is executed.

Panna Lāl and others are the chief artists at Ulwar, but Nand Kishor,* who is now in the service

* Nand Kishor, besides being a silversmith, is a mechanic of the highest ability. He has frequently made surgical instruments and cutlery from drawings, which have proved as good as similar articles from Europe, and has repaired and kept in order the most complicated scientific apparatus, particularly the Van Rysselberghe Meteorograph at Jeypore, an instrument of the most delicate construction.

of the Jeypore Court, continues to produce good examples of the work, though spoiling its effect, in many instances, by the use of engine-turned border patterns.

Amongst the illustrations to this number of the Journal of Indian Art will be found one of a tumbler of silver made at Bikanir, the capital of the desert State of the same name. The artist has engraved and chased spirited figures of Rajputs in panels upon a burnished and frosted ground. The work is very effective and quite suitable for the enrichment of silver plate, as it will wear well.

The existence of this and some other sumptuary arts in so remote a province is due to its inaccessibility. Bikanir and the neighbouring countries have long been the homes of many of the rich *Márwáris*, or bankers and traders who made their money in the great towns of Hindustan, but feared to display their wealth there in the lawless days of the later Mahomedan emperors and of the Mahrattas. They preferred to submit to the by no means light exactions of the desert chiefs, because they knew that they would never be carried so far as to drive them and their fellow-caste men to seek refuge elsewhere. The presence of such wealthy men of course implied support for artists of all kinds. Two illustrations are also given of silver articles contributed to the exhibition by Lálá Kasinath, the principal dealer in plate and jewellery in Jeypore or, perhaps, in Rajputána. The one, an *Abkhora* or drinking-vessel, is covered with an embossed floral design (Plate XV., Fig 2), the other is a salver of silver niello in which the outlines of the engraved pattern are in a black composition (Plate XV., Fig. 4).

The outlay in producing plate of this kind is not great. The inferior specimens cost for workmanship two annas for each rupee in weight, and the finest from twelve annas to a rupee. As there are so many silversmiths in Jeypore and all the great native capitals, it would be useless to attempt to give names of individual workmen, but any of the great dealers in Rajputána, such as Kasinath, may be trusted to supply good articles at a reasonable rate, provided, and this point cannot be too strongly urged, that they are not hurried. The curse of European patronage is undue haste. The one great drawback to the sale and production of Indian plate for the British market is the unsatisfactory state of the law on the subject, for not only is a high duty levied upon it as silver, but articles are liable, should they vary from the legal standard in any part, a by no means unusual circumstance, owing to the difficulties in casting an ingot of equal purity throughout, to be broken up at the Goldsmiths' Hall in London when presented to be marked. It is to be recollected that they cannot be sold as silver plate without the mark of the Goldsmiths' Company.

It is impossible, without including jewellery, to give an idea of the amount of silver plate made in a year in Jeypore.

A few notes may be added regarding the work produced by silversmiths for natives of India.

Although the use of silver and gold vessels is discouraged by the tenets of the Mahomedan religion, in practice it will be found that wealthy persons of that faith in India have not been prevented from using them, and that most of the articles made for poorer persons in the baser metals have been, and are, constantly prepared in silver, or even gold, for those who are able to afford the expense, and in such cases, provided figures have not been employed, ornament of some kind is always desired.

The Hindu, on the other hand, is only kept from using silver by considerations of cost, but he is content to have perfectly plain vessels, simple cups or bowls, polished only by use. The Hindu craftsman, however, lavishes much labour on the production of shrines for the temples, and especially of domestic images, and all the paraphernalia of Brahmanical worship.

Both Hindu and Mahomedan princes display their wealth in adorning their court furniture and the trappings and harness of their animals with the precious metals. Some of the finest surface patterns are found on *chobs* or the maces carried by peons, the pillars that support State canopies or Shamianahs, and the reins and other parts of the harness of horses. At the Jeypore Exhibition were displayed two large thrones of silver, camel saddles covered with plates of the same metal, and some massive elephant trappings. All of these articles were highly ornamented with bold embossed work, and enriched where necessary with gold plating.

It must be confessed, however, that in many instances the noble metals are simply employed to indicate the wealth of their owner, and are consequently left to tell the story without any ornament whatever.

The hooka and its appurtenances are, perhaps, the articles most elaborately adorned. They are always in use, and both Mahomedan and Hindu like to have them as beautiful as they can be made. His Highness the Maharája of Jeypore possesses some very fine specimens of hookas. One much admired at the exhibition is enriched with figures of sportsmen, musicians, and animals, in panels. This prince also owns a characteristic pencase and inkstand, a drawing of which is given with this Part of the Journal (Plate XIV., Fig. 1).

Bedstead legs of silver are often presented as part of the outfit of a bride; and beautiful swinging cots, with chains composed of links and figures of solid silver, are sometimes made. Silver is even employed for door-frames and braziers.

It is also one of the seven metals which form, according to Hindus, the most desirable combination for casting bells. It would be out of place here to mention its many uses in jewellery, lace-making, and so on. Enough has been said to show that in Native States the silversmith finds abundant and profitable employment, and the more particularly because in times of difficulty his work is melted up only to be done over again when his clients become once more prosperous.

STONE CARVING.

As might be expected from a country abounding in excellent building-stones of all kinds, the art of stone-carving has attained to great excellence throughout Rajputána and the neighbouring Provinces. These remarks are especially true of the northern and western portions of the area, where the dearth of timber has necessarily compelled builders to make use of the abundant and often easily worked stone at their doors.

The Táj Mahal at Agra is constructed of white marble from the quarries of Makrāna, in the hills on the Jodhpore border of the salt lake of Sambhur. The walls of the great forts at Delhi and Agra, the noble mosques at the same places, and most of the palaces at Fatehpore Sikri are built of red sandstone from the Bhurtpore State, while many of the exquisite coloured marbles of Jeypore and Ajmere, or the nummulitic limestones of Jeysulmer were employed in decorating them.

The repute of the Rajputána stone carvers is of ancient date. The temples at Ajmere were converted into a splendid mosque by Alla-u-din in the twelfth century, and the Kutb Minár and surrounding buildings, with their marvellous ornamentation, were, in all probability, the work of Hindus from Rajputána at about the same period; but as a proof of the still earlier celebrity of the country for its stones, and, presumably, its carving, may be mentioned the fact of the founder of Chamba in the Himalayas having sent, in the middle of the eighth century of our era, some of his nobles, and then his son and heir, to Abu for an idol for his new temple.

Rajputána is filled with magnificent cities and shrines, both ancient and modern. The exquisite tracery and panels in the ceilings and cornices of the Jain temples of Dewalwara on Mount Abu, the spirited bas-reliefs on the walls of the temples at Baroli, by the Chambal river, and at Harashnāth (dedicated to Shiva as the Lord of Joy), near Seekur, on the border of the Western desert, the elegant pierced façades of the palaces at Jodhpore, Jeysulmer, and Bikanir on the west, at Ajmere, Jeypore, Ulwar, and Kerauli towards the centre and east, with the beautiful figures, taken from the ruins of Champavati, in Sirohi, point to the widespread cultivation of the art of sculpture in the Land of the Rajahs and to the remote period at which it was first practised.

The whole plateau of Chitore, the ancient capital of the Maháránas of Oodeypore or Meywar, is covered with ruins of magnificent character—a perfect history of the decorative stonemason's art from the end of the ninth century, the age of a tower erected by the Jains—a beautiful structure covered with figures—down to the time of its desertion in A.D. 1568 for the modern capital of Oodeypore.

The Hindu Brahmanists and Jains in Rajputána and in Gujerát, which in its rulers and people was, and to some extent is even now, Rajput, were always great builders.

Mr. Hope, in his account of the Architecture of Ahmedabad (1866), in speaking of the last great works of the Hindu dynasties at Mount Abu and Chandravati, observes "that the Moslems were compelled to send their enslaved children to them to learn all that was beautiful in detail and plan," and, again, "they (the Mahomedans) found themselves among a people their equals in conception, their superiors in execution, and whose taste had been refined by centuries of cultivation. They forced on them, however, their own bold features of minaret and pointed arch, but borrowed their pillared hall, delicate traceries, and rich surface ornament." Of the temples of Abu he writes "that for delicacy of carving and minute beauty of detail they stand almost unrivalled, even in this land of patient and lavish labour." He shows how at Ahmedabad the beauties of the mosques and palaces, and the astonishing variety and delicacy of their ornamentation, though fully influenced by the Mahomedan domination, are the outcome of the study of the neighbouring Hindu buildings, and are practically the work of Hindus, and this is the less remarkable when it is recollected that Ahmed Shah, the founder of that city, was descended from Sehāran, a Rajput.

It has been pointed out that the early Mahomedan kings of Delhi employed Hindus from Rajputána in erecting and adorning their capital, but it is equally true that many of the palaces and public buildings, and even the temples, throughout Rajputána have, since the accession of the Mogul sovereigns to the Imperial throne, shown in their construction at least the great influence of the paramount Musalmán power.

It is evident that from one end of the Rajput land to the other there have been, and perhaps are, artists who have been able to design in endless variety, and statuaries who have carved, and can still carve, with equal skill, decorative work of beauty and power almost unapproachable elsewhere; but the subject is so wide that it is not proposed to dwell further upon it here, but to consider the branch of stone-carving which relates to sculpture of figures, as at present practised in the Province. Two illustrations, however, of copies of tracery from Ahmedabad are given, because they are the work of Hindus employed by the

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Wood Carving Company of that town, which, under American management, is endeavouring to foster the art, and to make known these beautiful works to the public in America and Europe by carefully reproducing them in wood or stone. The wonderfully elaborate and charming windows in a deserted mosque in the Bhudder at Ahmedabad, pictures in stone tracery of date palms and other foliage are reproduced by them in wood, at a cost of about a thousand rupees. The plates are taken from wood carvings.

Jeypore and the neighbourhood have become great depôts for the manufacture of images for distribution throughout the Hindu world. This is due principally to the extraordinary variety and purity of the marbles and other stones suitable for carving which are found close at hand; but it is in some measure owing to the town having been a great banking centre, as well as the capital of powerful Hindu princes, who even in the days of the iconoclastic Aurangzeb had sufficient influence to prevent the wholesale mutilation of their images.

The State of Jeypore attained to something like its present important position under Maharája Mān Singh, about the close of the 16th century. His increased territory and wealth enabled him to beautify his capital of Amber, and, in order to carry out his views, he invited statuaries from remote places to settle in his dominions. Some came from Māndugarh, in Central India, where the ruins of the ancient seat of the Māndu kings still attract attention; others from Nārnol and Mandáwar, and a few from Nangaon, near Dig, in the Bhurtpore State. When Maharája Sawai Jai *(Jey)* Singh built Jeypore (A.D. 1728), the *silāwats*, or stonemasons, removed to the new capital, and now form a large guild, living in a separate portion of the town called the stoneworkers' quarter, or *Silāwaten ka Mohala*. Many of the less skilled carvers are potters by caste, but the principal image makers are Brahmins.

There are about twenty families or firms of sculptors who employ about 150 workmen. The principal masters are:—

Tulsi Rām	Gobind Rām	Fateh Rām
Sheo Narāyan	Dhanna Lál	Bishan Rām
Bakhtáwar	Sálig Rām	Hukm Rām
Ganga Rām	Lachhman	

The principal prize holders at the Jeypore Exhibition were:—Ganga Baksh, Sheo Narayān, Gobind Rām, and Bakhtāwar, the two latter for figure-carving. The Jeypore School of Art and workmen employed by the Executive Engineers' Department also took prizes.

The School of Art* endeavours to improve the indigenous art of the town by showing how much can be done by a little more care in attending to details. The finish and technical excellence of the work done in the present day is, perhaps, superior to anything that has been produced in the past. This is certainly true of the decorative carving in the recently erected public buildings in Jeypore, for which the designs have been furnished by Dr. De Fabeck, formerly Principal of the School of Art, or by Major Jacob, the Executive Engineer of the State, who has gathered about him a number of artists and statuaries who are capable of executing work of the highest character. It may be, as some have asserted, that the Hindu himself is not able to produce designs of great merit, that, in short, he is merely a workman who carries out the ideas of others; but it is nevertheless perfectly true that without his patient labour, his infinite power of taking pains, these ideas could not have been carried out.

As in the case of enamel the designs for stone-carving are supplied by the painters or *Chiteras*, to whom is mainly due the degradation of art sculpture in India. As these men find a ready market for superior work they rarely take the trouble to produce a new design for an image, but copy old drawings which have descended to them from their forefathers—usually by the simple plan of pricking the outlines on the paper through with a needle, and then reproducing them with fine charcoal powder. Each specimen thus becomes worse than the last. The Hindu public during the Mahomedan supremacy, when artists and sculptors found decorative rather than figure carving most profitable, had to content themselves with inferior images, and the taste does not seem to have improved.

That the artist is still capable of better things is proved by the success with which some of Major Jacob's draftsmen have, after a few months' study of the arabesque carvings at Delhi, Fatehpore-Sikri, and other large towns, been successfully producing good designs, which are not copies of these originals, but really new creations of the same school.

At a distance of only about sixty miles from Jeypore are still to be seen, in the greatest profusion, bas-reliefs and statues of deities and animals of great beauty. These formed part of a magnificent temple erected in honour of Shiva by a Chohán king of Sámbhar, in A.D. 961, on the summit of the high hill of Harashnáth, near the modern town of Seekur. Youths were sent from Jeypore to copy these interesting sculptures, but it was found that they only made sketches of the principal figures in a bas-relief, and drew the rest at home, as was afterwards proved, in quite the spirit of the originals.

It will not be out of place to give some account of the valuable stones suitable for building and carving which are obtained in the neighbourhood of Jeypore, or worked up there.

The best white marble is procured from the quarries of Makrāna in the Jodhpore territory, not far from the Sámbhar salt lake. It is soft, easily worked, of a permanently pure white colour, and capable of taking a high polish. As, unfortunately, flaws are often found in it, it is not available for the highest efforts of the sculptor, but for building purposes no material can approach it in beauty. The Moti Musjid in the Agra Fort and the Táj Mahal are constructed of it, also portions of the Memorial Church at Cawnpore, which were presented by the Maharája of Jodhpore. A cubic foot of the stone weighs 160 pounds. A slab

* Principal, Baboo Opendro Nath Sen.

measuring 4.32 cubic feet will cost Rs. 3 per maund of 82 pounds, R. 1 being paid for the Jodhpore royalty, R. 1 for quarrying, and R. 1 for carriage to Jeypore. The State-tax varies from R. 1 for small pieces, to Rs. 6-4 per maund for slabs or pillars of from 40 to 50 maunds weight, the quarrying from 12 annas to Rs. 2, and the carriage from 12 annas to R. 1-8. Twelve annas are paid for sawing a square foot of the stone. A square foot of carved and polished tracery or "Jāli" at Jeypore would cost about Rs. 11.

Marble images and toys are produced in immense numbers and sold wholesale and retail at Jeypore and Dausa, an old town 35 miles north of it. Merchants come from Gujerát and other remote provinces towards the close of the year and purchase the stocks which have been made in anticipation of their visit during the preceding hot and cold seasons.

The Jains and other sects take plain images, but there is a great demand for coloured and gilded figures.

The stone usually worked at Dausa is brought from Rialo on the Ulwar border. Some white marble from the same series is also found at Jhirri in the Ulwar State; it is exceedingly hard. The Rialo stone is said to be less pure, and is softer; it is frequently marked with light-blue veins, which in the case of the pillars of the great billiard room of the Jeypore palace are very beautiful.

Major Powlett, author of the Ulwar Gazetteer, considers the Jhirri stone the finest white statuary marble in India. As the Rialo stone is much cheaper than that from Makrāna, it is more often employed for building purposes, as well as for large images. Cream-coloured and white marbles are also taken from Bassi, near Jeypore. Stone of this cream colour, it appears, is much admired in Europe. The Makrāna marble of the famous Táj Mahal and the Agra and Delhi mosques, however, most certainly owe their marvellous beauty to its perfect purity and dazzling whiteness.

Grey and pink marbles also come from Rialo. Bainslána—a quarry in the estate of the Raja of Khetri, a feudatory of Jeypore—yields a black marble which is much valued by the statuaries, who make from it elephants and other toys, Jain images, and especially the lingam or emblem of Shiv.

A large number of black images, made at Jeypore, which are commonly sold as of marble, are really formed out of a much more easily worked and less expensive chlorite, from Dungarpore, a small state about 120 miles north of Ahmedabad.

A marble, varying in colour from salmon to dark red, is procured at Baldeogarh, 88 miles from Jeypore, on the Ulwar border; it is also used for making images, and particularly for large plates, figures of camels, and other animals.

Beautiful green and other marbles have been found at Ajmere, and have been used with great effect in the mosaic pavements of the Mayo College at that place.

At Jeysulmer, on the extreme north-west of Rajputána, are found some very beautiful nummulitic limestones, which have been employed throughout India for wall and pavement decoration. They, or stones of the same formation, have been largely used in the Shalimár Gardens at Srinagar in Kashmir, in the palaces at Oodeypore, and in the magnificent buildings at Delhi and Agra.

With regard to the limestones, it is sufficient to note that they are found abundantly in many parts of the province, but as they are not often carved, particulars regarding them need not be given here. Sandstone of very fine quality, on the contrary, is very suitable for trellis-work, and even figure-carving. It is procurable on both the eastern and western borders of Rajputána. The desert capitals of Jodhpore and Bikanir are built of it, and there is scarcely a house front in them that is not adorned with elaborate carved work. The same remarks apply to the towns of Kerauli, Hindown, Bhurtpore, and others on the west. Agra, from its vicinity to the Bhurtpore quarries of Biána, has become famous for its workers in fine sandstone. Forty selected geometrical patterns of trellis-work were recently procured for the Jeypore Museum at the rate of R. 1 per square foot; this will give some idea of the cost of the stone and value of the labour on such work.

Some very good figures, on a large scale, have been made at Jeypore in red sandstone, and there is a beautifully executed gateway adorned with carvings in high relief in this material in the Jeypore Palace.

Some of the sandstones and grits are used for making domestic utensils, such as handmills, cups, rolling pins, spice tablets, &c. Many of these articles are slightly ornamented with carving.

Soapstone, steatite, or Ghai Bhatta, is found near Rialo; it is in much demand at Agra for making into models of the public buildings there, and into toys.

It is stated that the Bombay engineers find it cheaper to obtain marble from Italy for their public buildings than to procure it from Rajputána. It is to be hoped that increased production and cheaper railway freight may remedy this evil.

The total sale of stone carvings in the Jeypore State is from Rs. 15,000 to Rs. 20,000 per annum, of which about Rs. 10,000 worth are exported.

The wages of the sculptors, chiefly Hindus, range from Rs. 8 to Rs. 15 per mensem, and of the quarrymen, who are usually Mussalmáns, from Rs. 10 to Rs. 20 a month for day labour, or from 8 annas to R. 1 per maund at piece-work.

A duty of 4 per cent. is paid on rough marble at Jeypore, and the same amount on articles exported.

The *chiterás*, or painters who colour and gild the images, earn about Rs. 10 per month.

IVORY INLAYS.

It is not intended in this number of the Journal to treat the subjects of ivory carving and ivory inlay at length, but merely to draw attention to the beautiful and interesting specimen of the latter art which is illustrated in Plate XVIII. It is the work of one Sita Rām, of Etawah, a small place in the State of Kotah, in Rajputána. The jury at the Jeypore Exhibition considered this, and other examples of Sita Rām's skill, finer by far than anything else shown in the same class.

The articles generally made are powder-flasks, inlaid with ivory and mother-of-pearl on buffalo horn; but Sita Rām also prepares small boxes, and the inlay might be applied to dressing-cases, to weapons, and to many other purposes.

The cost of the specimens exhibited at Calcutta in 1882 were as follow:—

	Rs.	as.	p.
Powder Flask (shaped like Plate XVIII.)	22	0	0
" " (fish shaped) - - -	15	0	0
Box - - - - - - - - - -	25	8	0

The prices of the same patterns were somewhat less at Jeypore.

GARNETS.

Although Jeypore has been for some years past locally known as the centre for a considerable trade in garnets, which have been found in the neighbouring districts, it does not appear, from an examination of the mineralogical and other collections in London, and from the references in encyclopædias and other works, that much accurate information is possessed on the subject.

There are no garnets from Rajputána in the British or Geological Museums in London, and some strings of cut and round carbuncles in the South Kensington collections are labelled as coming from Madras.

As the trade at Jeypore, owing to the exertions of Mr. S. J. Téllery,* has become of some importance, and as the stone is not only used as a gem but is of some value in the ornamental as well as in the industrial arts, some account of the trade in it seems desirable.

The principal places at which garnets are found are Sarwár in the Kishangarh State, and Rajmahal, on the property of the Thakūr of Dūni, one of the principal nobles of Jeypore. It is not certain when the stones were first known to exist at these places, but it is stated that about fifty years have elapsed since they were regularly exported through Jeypore to Delhi.

The persons principally engaged in digging in the garnet quarries are Jogis or Hindu ascetics, whose ancestors were accustomed to visit the forests and waste places in which they are found, on pretence of making pilgrimages.

It was at length discovered that these pious individuals were really collecting the gems in the neighbouring river beds, and were even digging for them with a view to their sale at Delhi, the great mart for such articles. Upon this discovery being made the lords of the soil began to levy a tax for digging in the quarries, the principal of which are as follow:—

Rajmahal, Aliara, Nari, Dera	at Rajmahal in the South of Jeypore
Sarwár, Jedana, Bathera, Kochera	at Sarwár, in Kishangarh.
Jhirin, Sangora, Bansera, Pitawás, Salara	in the Oodeypore or Meywar State.
Kekri	in the British district of Ajmere.

Formerly the most prolific quarries were at Rajmahal and Sarwár, but the former have been for some time closed, owing to a difference as to the ownership or right of taxation, while the production at the latter does not appear to have been much encouraged by the Kishangarh Government. Most of the garnets, therefore, come from the Oodeypore State, and a few from Kekri, but a good many still appear in the market which have been obtained surreptitiously from the Rajmahal villagers.

A number of small but good garnets are also collected, after the periodical rains, from the river beds of Meywar.

The stones are found in mica-schist, in gneiss, limestone, chlorite, slate, and serpentine, and are gene-

* The writer is indebted to Mr. Téllery for the greater part of the information given under this head.

rally in dodecahedral crystals, some of which are very perfect. The quarries are not all of equal depth, as in some places the garnets are found from three feet down to sixty or eighty feet, while in others none are seen above twenty feet.

The pieces of garnet vary from one-sixteenth to one inch in diameter; larger sizes are rare. The colours range from the deepest red to a violet purple and yellow. The best colours and the largest stones are found at Rajmahal.

No duty is levied on either rough or cut garnets, but the right of digging is given in contract to the quarrymen, who pay from Rs. 4 to Rs. 20 per mensem for each pickaxe-man, who enjoys also the right of employing three more men to carry out the mud and earth in baskets. The workmen are generally the contractors, and rarely earn less than eight annas per diem, though, if fortunate, they may clear as much as from Rs. 300 to Rs. 500 in a month.

In addition to the Jogis, a few men of the Balai, Koli, and Gujar castes have of late begun to dig.

The Rajputána garnets are similar to the Pegu or Syriam stones, or the commonly called Amethystine or Oriental garnets. According to Pliny, the dull-coloured *Carbunculus* of India used to be hollowed out into vessels that would hold as much as a pint, but such large specimens are certainly not found in the present day, though, perhaps, if the Rajmahal quarries were properly worked good pieces of some size might be obtained, for it is stated at Jeypore that clean stones were formerly not uncommonly discovered up to a weight of six tolas, or 2.4 ounces.

The rough stones are sold by the diggers to dealers on the spot, or to the lapidaries in Jeypore or Sarwár. The best are cut *en cabochon*, or into tallow shapes, that is to say, as carbuncles or stones hollowed out into a concavity underneath, like half-plums; these are largely exported to Switzerland, Germany, England, Italy, Austria, and France, to be used for ornamental purposes, and as jewellery. The violet stones, or almandine garnets, are much admired in France. The commoner rough stones are also exported in considerable quantities for watch-making purposes. They are valued at from 12 annas to Rs. 3 per seer, or a little over two pounds, at Jeypore. The better stones, worth from Rs. 10 to Rs. 150 per seer, are all cut *en cabochon* by the lapidaries, of whom there are at present about one hundred and fifty at Jeypore, and fifty at Sarwár. These men are Mahomedans, and earn from 4 annas to R. 1 per diem. The garnet is cut with *kurand*,* or corundum.

Four or five lapidaries settled in Jeypore, about sixty years ago, to cut sapphires, rubies, or spinels, but not garnets. They only began to cut these some forty years since, another confirmation of the truth of the statement that the garnet quarries were discovered, or perhaps re-discovered, about that time.

The total annual exports up to about 1876-1877 did not exceed Rs. 7,000 or Rs. 8,000, but they have now risen, in Mr. Téllery's hands, to about Rs. 70,000 for 1882, of which Rs. 52,500 were for cut cabochons and the remainder for rough stones. Although certain kinds of garnets (*pŭlak*) if strung on a thread are, according to Raja. Comm. Sourindro Mohun Tagore in his Mani Mála, or treatise on gems, sound and auspicious, and heralds of good fortune, Hindus rarely if ever use them, but a small quantity of inferior stones, prepared as necklaces and bracelets, are sold to Punjab dealers, who export them to Kabul, Persia, and Central Asia.

About Rs. 2,000 worth are disposed of to Delhi and Agra dealers, who sell them to Europeans for necklaces and bracelets, for which purposes they are either facet-cut or formed into round beads.

There are fifteen men employed at Jeypore whose sole business is to drill holes in garnet beads. They earn from 4 to 8 annas a day.

The stones, when cut *en cabochon*, are sold by the tola, increasing in price according to their size and colour. Good coloured and clean garnets are sold wholesale from 8 annas to Rs. 25 per tola, while exceptionally large and clear stones have brought as much as Rs. 300 per tola. Mr. Téllery has not seen good stones more than four tolas in weight.

Mica, which is found in association with these garnets, is also sold for various purposes in the native market, principally for the adornment of the Tazias, or models of the tomb of Husan and Hussain carried at the Mohurrum by Mahomedans, for imitation flowers, and as a substitute for glass in windows. At present it has not been procured sufficiently good for lamp chimneys and such like uses; but if beds of clear and flexible quality were discovered, a large trade would at once be developed.

T. H. HENDLEY.

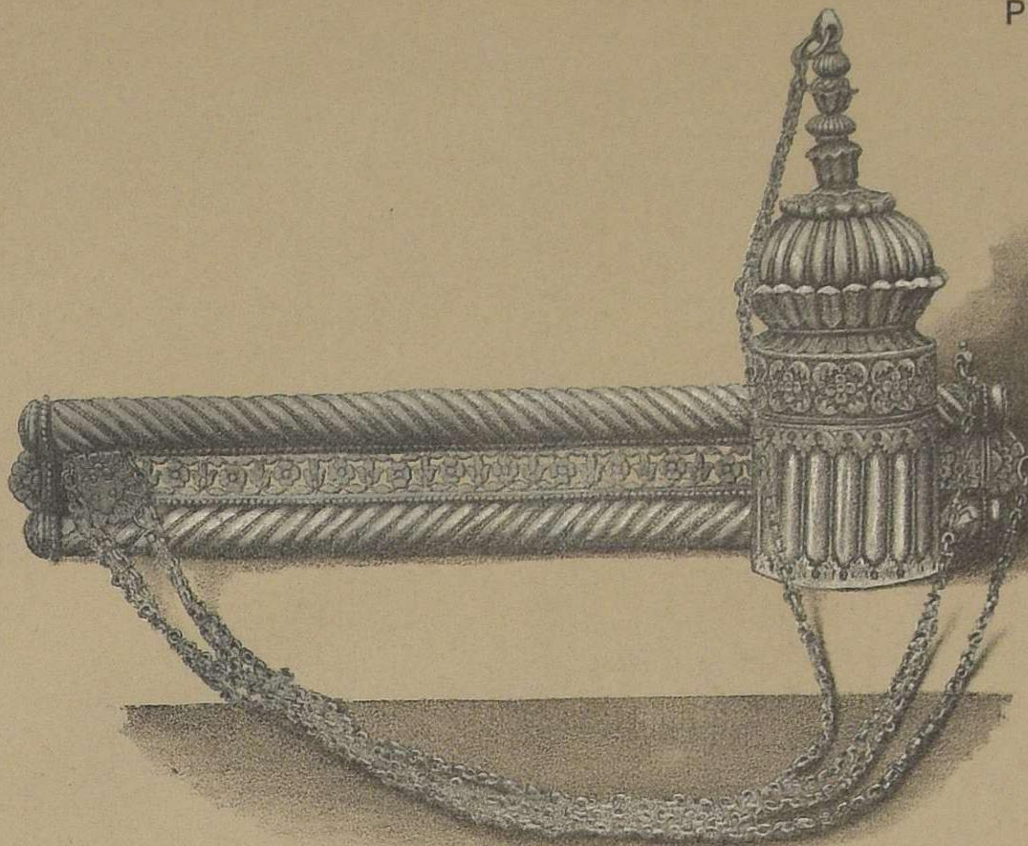
*The Sanskrit word *Kurand* includes all the varieties of the corundum, from the Ruby to Emery.

PLATE XII.

1. Crutch and part of Staff of Maharája Mán Singh of Jeypore (Died A.D. 1615). Jade set with gems, and gold enamel.
2. Ornamentation of the Staff shewn in detail.

Drawn by Rákhi Chand, Múrli.

Designs for Modern Enamel. 1. Three plaques of Pertabgarh quasi-enamel.
2. A salver of Jeypore gold enamel. 3. Three plaques of Múltán silver enamel.



1

E. 13593

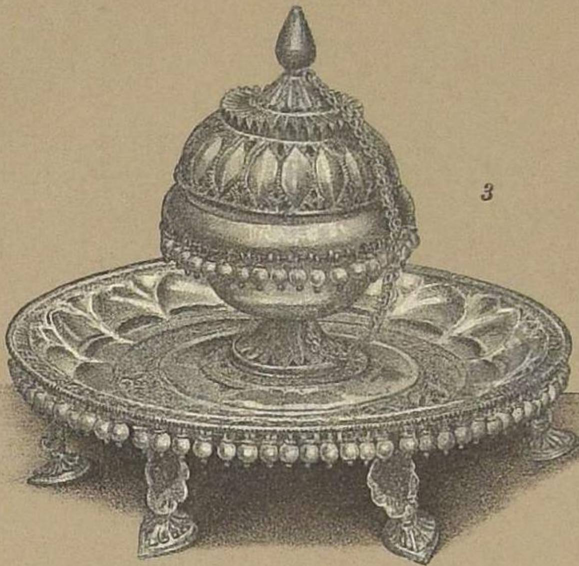
2

1.— Ink Stand and Pencase. Silver. Property of H.H. The Maharaja of Jeypore.
2. Centre Piece Perfume-holder ('atrdán) and tray for betel, and spices, from Tonk, *Piráwah District*, silver, parcel-gilt.

From photographs by Corporals Stroud and Futcher, Rurki.

1

2



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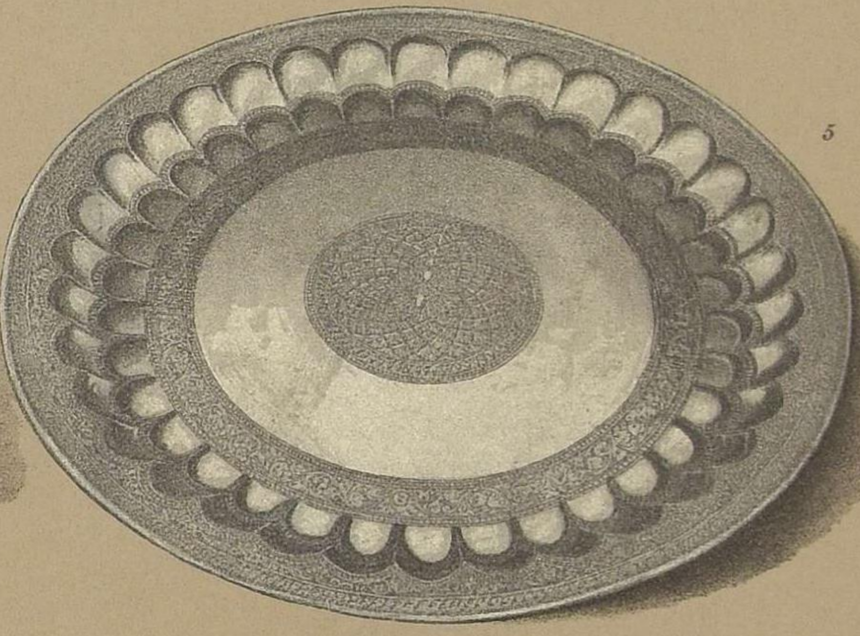
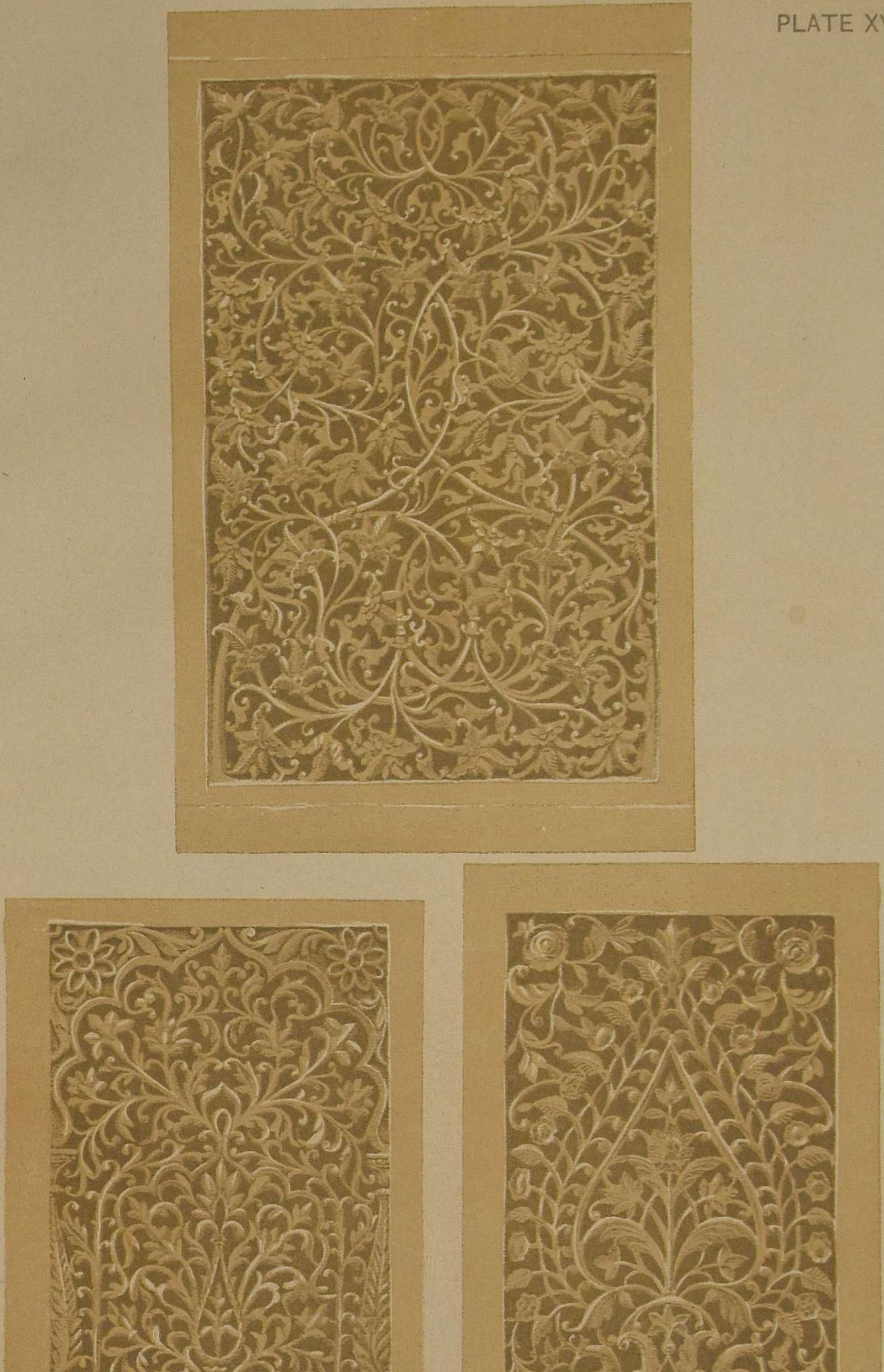


1. Tumbler, from Bikanir, silver, chased and engraved.
2. Water vessel (*Abkhora*) from Jeypore, silver.—Exhibited by Lala Kasináth.
3. Perfume stand and cup ('atrdán) Tonk, *Chabrah District*, silver, parcel-gilt.
4. Salver, Silver-niello.—Exhibited by Lala Kasináth, Jeypore.
5. Salver, from Tonk, *Chabrah District*, silver, parcel-gilt.

From photographs by Corporals Stroud and Futcher, Rurki.



W. Griggs, Photo-lith., London. S.E.

Three carved panels in wood, copied by the Ahmedabad Wood Carving Company, from stone windows at Ahmedabad.

From photographs by Corporals Stroud and Futcher, Rurki.

W. Griggs, Photo-lith., London, S.E.

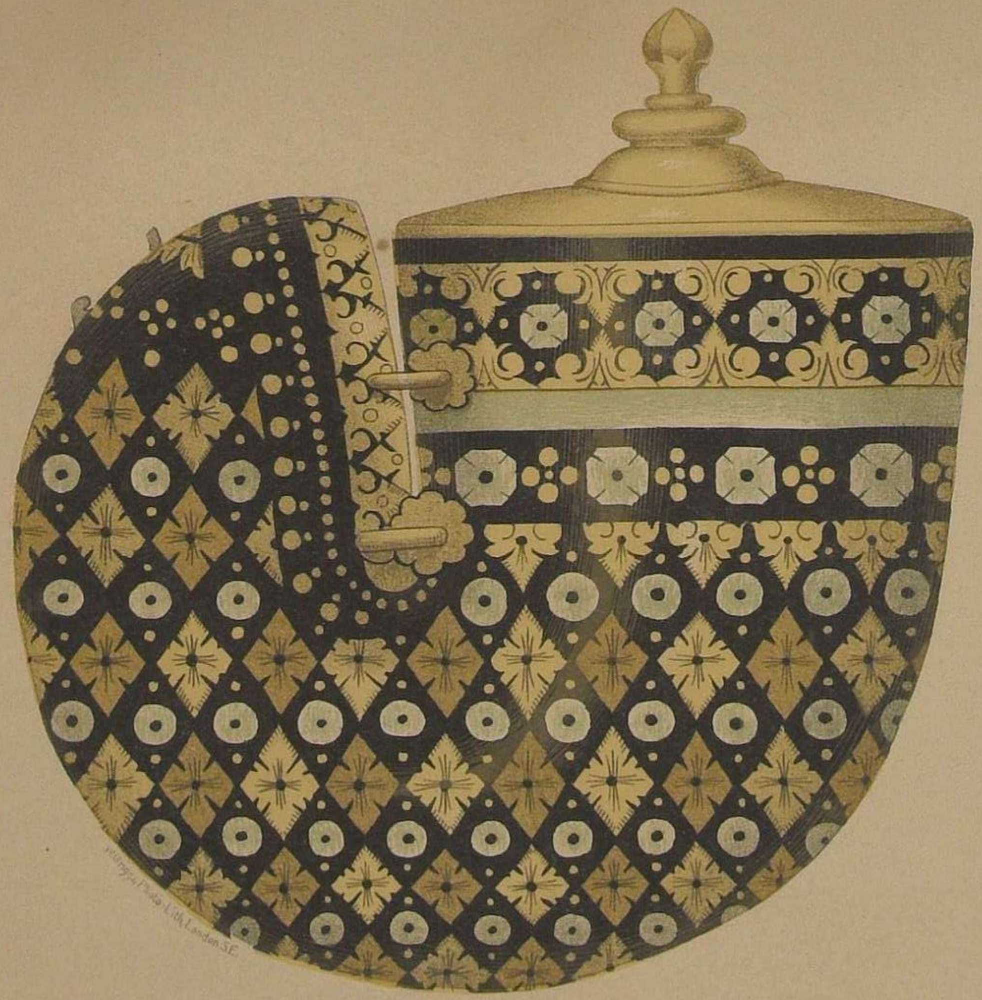
Carvings in white marble, from Jeypore, Rajputana.

1. Lachhmi Náráyan, or Vishnu and Lachmi (Hindu deities), coloured and gilt. 2. Maha Lachhmi. The Hindu goddess of abundance.

3. Model of a temple of Mahadeo or the god, Shiva.

From photographs by Corporals Stroud and Futcher, Rurki.

PLATE XVIII.



1

2

1. Powder horn. Buffalo horn inlaid with ivory and mother-o'-pearl. Made by Sita Ram at Etawah near Kotah. *Drawn by Narayan Carpenter.*
2. The opposite side of No. 1. *Drawn by Hari Ram Carpenter.*